CLAIMS

LISTING OF CLAIMS

1-11. (Canceled)

12. (Withdrawn) A phacoemulsification system for regulating fluid flow and energy into an eye during ocular surgery, comprising:

a handpiece; and

a control console configured to provide phaco power to the handpiece, irrigation fluid to an eye, and an aspiration source for removing fluid from the eye;

the system configured to establish a correlation between a fluid flow through the eye, the phaco power and heat generation in the eye without measuring fluid temperatures.

13. (Withdrawn) The phacoemulsification system of claim 12, wherein the fluid flow is determined by at least one of an aspiration flow sensor and an irrigation flow sensor.

14. (Withdrawn) A phacoemulsification system for regulating fluid flow and energy into an eye during ocular surgery, comprising:

a handpiece; and

a control console configured to provide phaco power to the handpiece, irrigation fluid to an eye, and an aspiration source for removing fluid from the eye;

a microprocessor configured to establish a correlation between a fluid flow through the eye, the phaco power, and heat generation in the eye without measuring fluid temperatures;

the microprocessor configured to calculate an energy balance within the eye over a predetermined period of time, the calculation based upon a cumulative amount of phaco power delivered over the predetermined period of time and a cumulative amount of fluid removed from the eye over the predetermined period of time;

the system configured to modulate at least one of a phaco power level, a phaco duty cycle, and the fluid flow through the eye, the modulation being based upon the energy balance.

15. (Withdrawn) The phacoemulsification system of claim 14, further comprising a flow sensor for determining the cumulative amount of fluid removed from the eye.

16. (Withdrawn) The phacoemulsification system of claim 14, further comprising a matrix comprising phaco power levels and fluid flow conditions that do not generate sufficient heat to create damage of eye tissue within the eye.

17. (Withdrawn) The phacoemulsification system of claim 16, wherein the system is configured to provide a warning when the system is operated outside the matrix.

18. (Withdrawn) A phacoemulsification system for regulating fluid flow and energy into an eye during ocular surgery, comprising:

a handpiece;

a control console configured to provide phaco power to the handpiece, irrigation fluid to an eye, and an aspiration source for removing fluid from the eye; and

a microprocessor configured to calculate an eye temperature based upon a cumulative amount of phaco power delivered over the predetermined period of time and a cumulative amount of fluid removed from the eye over the predetermined period of time.

19. (Currently Amended) A phacoemulsification system for regulating fluid flow and energy into an eye during ocular surgery, comprising:

a handpiece;

a control console configured to provide phaco power to the handpiece, irrigation fluid to an eye, and an aspiration source for removing fluid from the eye; and

a matrix comprising phaco power levels and fluid flow conditions that will not generate sufficient heat to create damage to eye tissue within the eye,

wherein the system is configured to control at least one of the phaco power or fluid flow based upon an amount of thermal energy delivered to the eye over a predetermined period of time.

20. (Currently Amended) The phacoemulsification system of claim 19, wherein the matrix comprises combinations of phaco power levels, duty cycles, and fluid flow conditions that will not generate sufficient heat to create damage to eye tissue within the eye.

21. (Previously Presented) The phacoemulsification system of claim 19, further comprising a flow sensor for determining a cumulative amount of fluid removed from the eye over a predetermined amount of time.

22. (Previously Presented) The phacoemulsification system of claim 19, further comprising at least one temperature sensor for determining a temperature of at least one of the system, the eye, and a fluid within the system or the eye.

23. (Previously Presented) The phacoemulsification system of claim 19, further comprising a microprocessor for determining the matrix.

24. (Previously Presented) The phacoemulsification system of claim 23, wherein the system is configured to adjust a phaco power level based upon the fluid flow conditions.

25. (Previously Presented) The phacoemulsification system of claim 23, wherein the system is configured to adjust a phaco power duty cycle based upon the fluid flow conditions.

26. (Previously Presented) The phacoemulsification system of claim 23, wherein the system is configured to adjust a phaco power level based upon irrigation fluid flow conditions.

27. (Cancelled)

28. (Withdrawn) A phacoemulsification system for regulating fluid flow and energy into an eye during ocular surgery, comprising:

a handpiece;

a control console configured to provide irrigation fluid to an eye, and an aspiration source for removing fluid from the eye, and phaco power to the handpiece, the phaco power supplied according to existing power settings; and

a microprocessor configured to utilize a mathematical algorithm for determining an energy balance within the eye;

the microprocessor configured to determine whether to continue with existing power settings or switch to modified power settings.

29. (Withdrawn) The phacoemulsification system of claim 28, wherein the console is configured to detect an energy imbalance in order to prevent thermal damage to eye tissue.

30. (Withdrawn) A phacoemulsification system for regulating fluid flow and energy into an eye during ocular surgery, comprising:

a handpiece;

a control console configured to provide phaco power to the handpiece, irrigation fluid to an eye, and an aspiration source for removing fluid from the eye; and

a look-up table for determining an energy balance within the eye;

the console being configured to detect an energy imbalance in order to prevent thermal damage to eye tissue.

31. (Withdrawn) A method for regulating fluid flow and energy in a control console during ocular surgery, comprising:

providing a handpiece and a control console;

monitoring power provided to the handpiece;

determining a fluid flow by monitoring fluid removed from the eye by the aspiration;

establishing a correlation between the fluid flow, the power, and heat generation in the eye.

32. (Currently Amended) A method for regulating fluid flow and energy in a control console during ocular surgery, comprising:

providing a handpiece and a control console;

providing a matrix comprising power levels, power duty cycles, and fluid flows that will not generate sufficient heat to create a burn of eye tissue; and

controlling at least one of the phaco power or fluid flow based upon an amount of thermal energy delivered to the eye over a predetermined period of time.

33. (Previously Presented) The method of claim 32, wherein the matrix comprises combinations of the power levels and duty cycles that will not generate sufficient heat to damage eye tissue.

34. (Withdrawn) A method for regulating fluid flow and energy in a control console during ocular surgery, comprising:

providing a handpiece and a control console;

monitoring power provided to the handpiece;

determining a fluid flow by monitoring fluid removed from the eye by the aspiration;

providing an algorithm to determine an energy balance within the eye; and

using the algorithm to determine whether to continue with existing power settings or switch to modified power settings.

35. (Withdrawn) The method of claim 34, further comprising using the algorithm to determine whether to continue with existing fluid settings or switch to modified fluid settings.

36. (Withdrawn) A method for regulating fluid flow and energy in a control console during ocular surgery, comprising:

providing a handpiece and a control console having a microprocessor;

determining cumulative phaco power delivered over a predetermined period of time;

determining cumulative fluid removed from an eye over the predetermined period of time;

determining the eye temperature based upon the cumulative phaco power and cumulative fluid removed from an eye over the predetermined period of time;

calculating an energy balance over the predetermined period of time; and

based upon the energy balance, modulating at least one of a phaco power level, a phaco duty cycle, and a fluid flow through the eye.